TRICARE Data Quality Training Course

August 2012

What is DHSS?
40,000 Foot View

- DHSS is an Office for the Military Health System that builds or maintains products in three major areas: Clinical Support, Medical logistics, and Resources.
- Supports TRICARE decision making that makes the vision of the Military Health System Plan possible
- It is the Military Health System technology that integrates and standardizes clinical, resource, population, logistics, and other referential information

Defense Health Services Systems DHSS Program Executive Office

DHSS Supports Enterprise-Wide Data Quality Efforts

What is DHSS?

- DHSS operates MHS's centralized data store
- Receive, analyze, process, and store 100+ terabytes of data
- Thousands of users worldwide
- DHSS Systems Include:
  - MDR being the "Feeder" for "DATA M

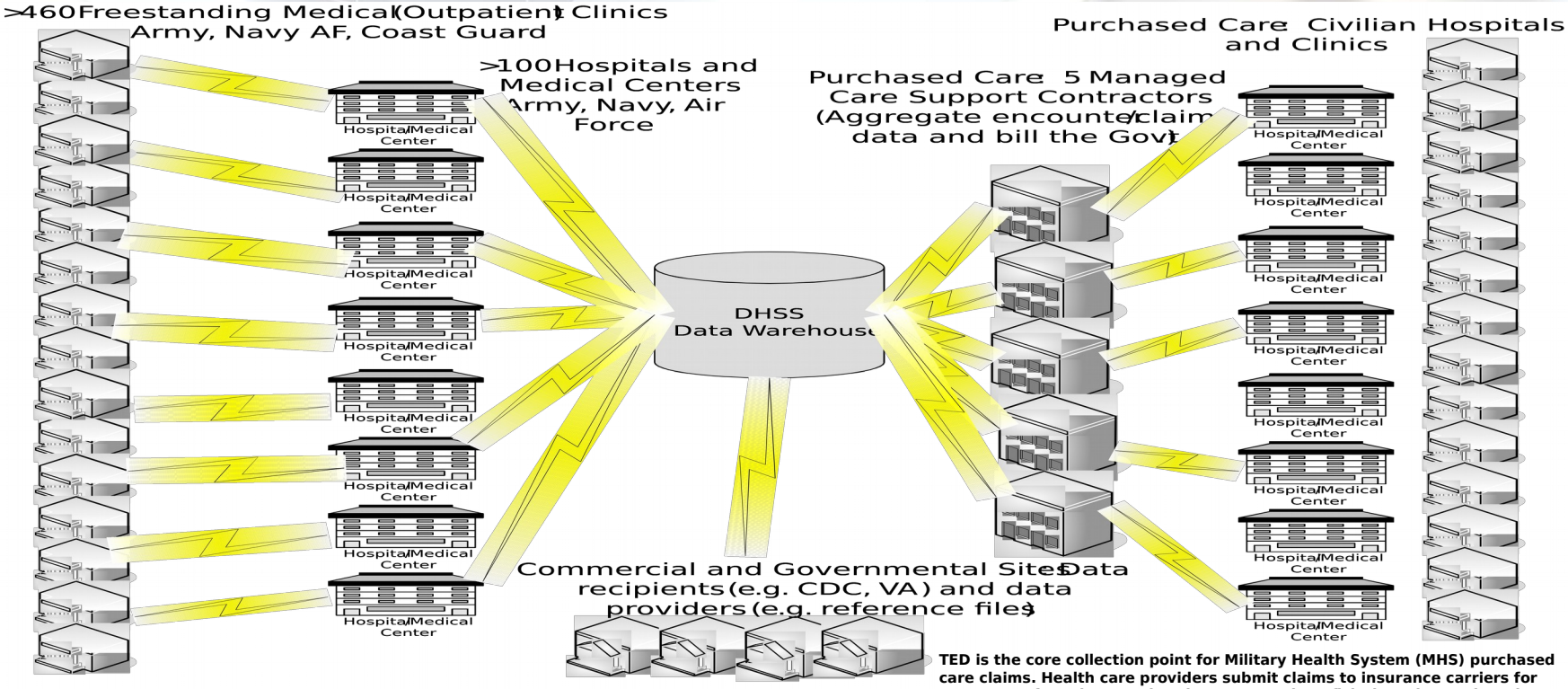
Objective

- Why data quality matters for DHSS
- How DHSS's tools affect the data and quality of data used in decision making
- How you can use DHSS information in your data quality program

Clinical Support	Medical Logistics	Resources
CCQAS	CUD	CCE
M2	DCAM	DMHRSi
MDR	DMLSS	EAS IV
NMIS	DOEHRS-HC	MHS Learn
PSR	DOEHRS-IH	PEPR
SNPMIS	ESSENCE	PHIMT
TOL	JMAR	TED
	PMITS	TPOCS
	TEWLS	

DHSS
Program Executive Office

What is DHSS?
20,000 Foot View

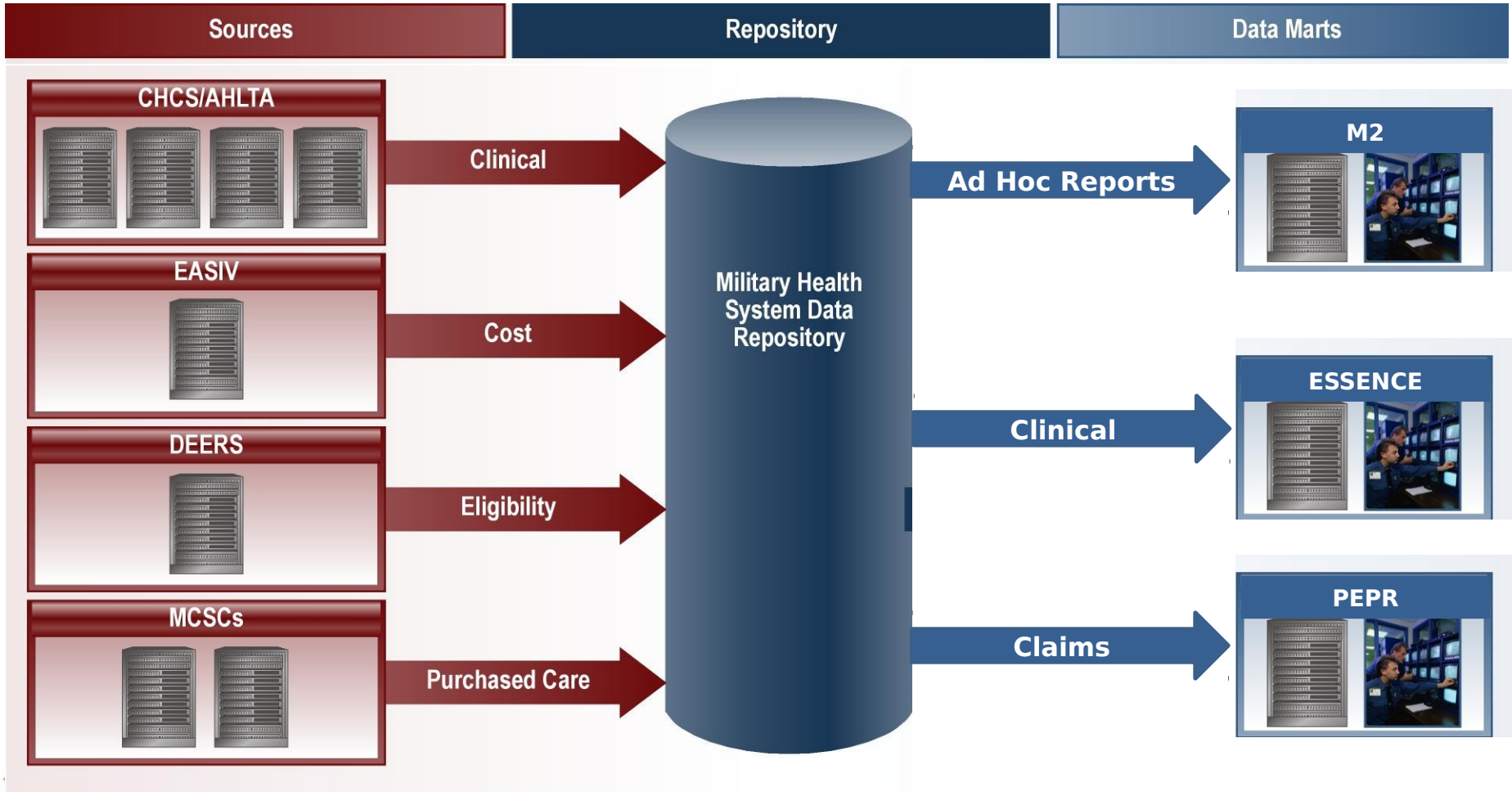


TED is the core collection point for Military Health System (MHS) purchased care claims. Health care providers submit claims to insurance carriers for payments of services rendered to TRICARE beneficiaries. The carriers then electronically transmit their claims payment information to TRICARE, using TED.

Circa 10 Million Beneficiaries	
Direct (Military Provided) Care:	**Inpatient: 250,000 Annually Outpatient: 30 Million Annually**
Purchased (Civilian Provided) Care	**Inpatient Claims: 800,000 Annually Outpatient "Claims": 100 Million Annually**

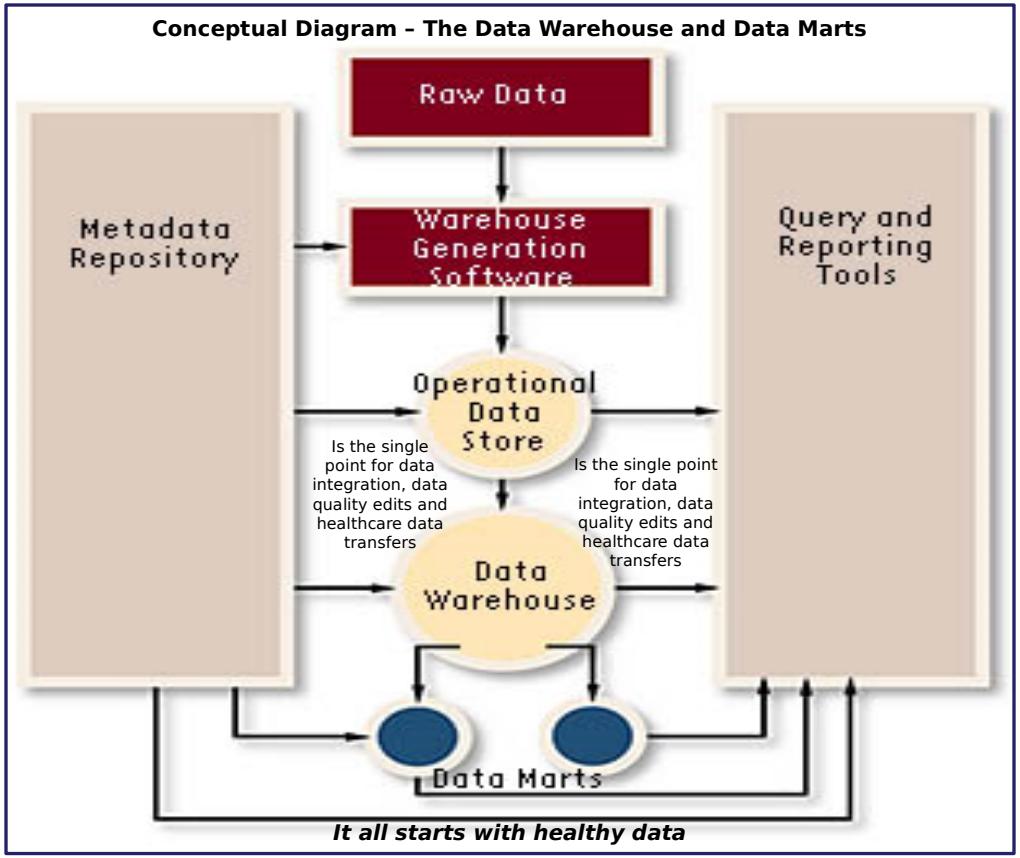
DHSS Program Executive Office

DHSS Architecture
5,000 Foot View



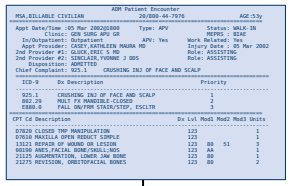
DHSS – The Healthcare Data Warehouse 1,000 Foot View

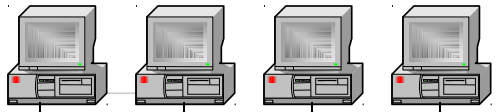
- **A wide variety of healthcare data**
  - Rx, Lab, Rad, etc
  - Inpatient Episodes
  - Outpatient Encounters
  - Survey Data
  - Enrollment Data
  - Reference Data
  - Claims Data
- **Collects and distributes data**
  - Daily, weekly, and monthly
  - From over 460 freestanding clinics and 100 hospitals
  - From thousands of civilian facilities
  - Worldwide geographic distribution

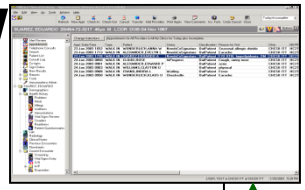


CHCS Host Architecture and DHSS Interfaces

• 100 FOOT View







• *CDM Data Provided to DHSS*

• CDR

• CLINICAL DATA REPOSITORY

• ELIGIBILITY & ENROLLMENT

• CHCS Host Patient

• Standard Files and Tables (DMIS, ICD-9, CPT/HCPCS, DRG, HIPAA Taxonomy, National Drug Codes, Zip

• Site Defined Files and Tables (Hospital Locations, Providers, Users, Formulary,

• Application Business Rules

• Inpatient Admissions and Dispositions (PAD)

• Outpatient Appointment Scheduling Managed Care Program (PAS/MCP)

• Ambulatory Data Module (ADM)

• Clinical Order Entry and Results Reporting

• Laboratory (LAB)

• Radiology (RAD)

• Pharmacy (PHR)

• Consults

• Nursing Orders

• Medical Services Accounting (MSA)

• Workload Assignment Module (WAM)

• CHCS Generic Interface System (GIS) for (HL7) and Electronic Transfer Utility (Sy_ETU)

• ADT (Admit, Discharge, Transfer, other status)

• *DHSS HL7 ADT*

• LAB

• INSTRUMENTS

• CO-PATH

• LAB-INTEROP

• DBSS

• HIV

• DIN-PACS

• VOICE RAD

• *DHSS HL7 RAD*

• PDTS ATC

• BAKER CELL

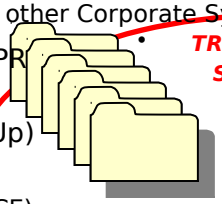
• PYXIS

• VOICE REFILL

• HL7, M/OBJECTS, OR CUSTOM INTERFACES

- AHLTA
- ICDB
- *DHSS*
- DoD/VA SHARE
- CIS/ESSENTRIS
- AUDIO CARE
- TRANSPORTABLE CPR
- TRAC2ES
- CAC (Patient Look-Up)
- NMIS
- CODING EDITOR (CCE)

• SFTP DATA TRANSFERS to DHSS and other Corporate Systems



- *TRICARE OPS CTR (WW)*
- *SIDR/SADR/CAPER*
- *EAS/MEPRS*
- *WWR*
- *APPOINTMENTS*
- *ANCILLARY*
- *GCPR Extracts*
- *SIT/OHI and CADRE*

MDR (MHS Data Repository)

Centralized data capture and validation of MHS data worldwide

More than 5 billion records on-line with 10+ years of data

Provides repository for other systems & applications to receive extracts

Typical users: small cadre of high-level data analysts

The Military Health System Data Repository [MDR] is the centralized data repository that captures, validates and distributes health network data worldwide.

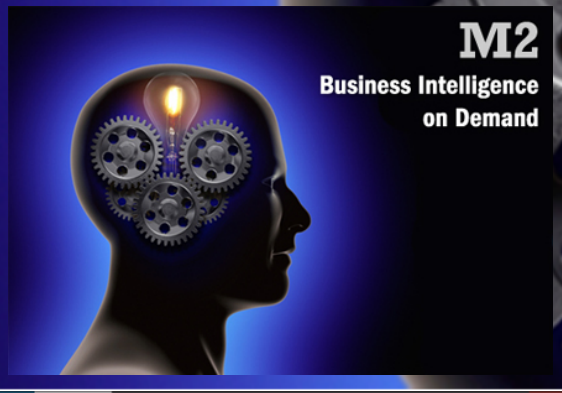
It is the single point for data integration, data quality edits, online and nearline data storage and healthcare data transfers.

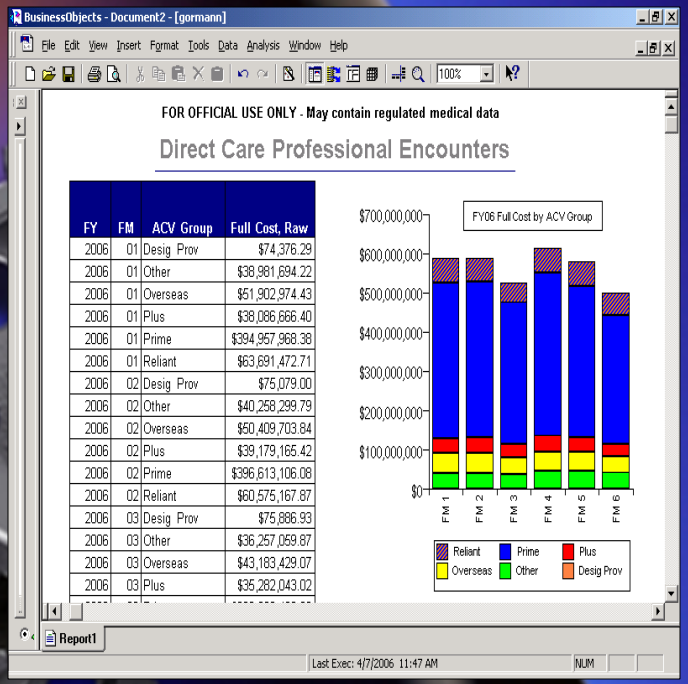
Preserves historical "raw" data by type and by year and normalizes/processes data against specific business rules.

Serves as the single point for data integration, data quality edits and healthcare data transfers

M2 (MHS Management Analysis & Reporting Tool)

- Powerful ad hoc query tool for detailed trend analysis such as patient and provider profiling
- Typical users: Data analysts skilled in Business Objects software





FY	FM	ACV Group	Full Cost, Raw
2006	01	Desig Prov	$74,376.29
2006	01	Other	$38,981,694.22
2006	01	Overseas	$51,902,974.43
2006	01	Plus	$38,086,666.40
2006	01	Prime	$394,957,968.38
2006	01	Reliant	$63,691,472.71
2006	02	Desig Prov	$75,079.00
2006	02	Other	$40,258,299.79
2006	02	Overseas	$50,409,703.84
2006	02	Plus	$39,179,165.42
2006	02	Prime	$396,613,106.08
2006	02	Reliant	$60,575,167.87
2006	03	Desig Prov	$75,886.93
2006	03	Other	$36,257,059.87
2006	03	Overseas	$43,183,429.07
2006	03	Plus	$35,282,043.02

DHSS Data Quality Requirements

- Capture and catalog data files
- Assess and monitor data completeness
- Perform data quality assessments (basic validity checks)
- Develop and maintain data quality software that:
  - Performs automatic data quality checks
  - Implements data quality assessments
  - Provides metrics and manages perspective of the files' data quality
  - Provide feedback on "outliers" to respective services, sites or POC's

DHSS Data Quality Metrics Address:

- Integrity: is it secure?
- Relevancy: is it appropriate?
  - Reliability: is it rationally correlated? (e.g. CAPER vs Appts vs SADRs)
  - Validity: is it sound? (e.g. not from TEST MEPRS codes, does it represent a valid encounter)
- Consistency: is it free from contradiction?
  - Uniqueness: is it free from duplication?
- Timeliness: is it available when needed?
  - E.g. What are the lag times from encounter to visibility in datamarts?
- Completeness: is it whole?
  - e.g. truncated/aberrant/malformed
- Accuracy: is it free from error?
  - "Functional" analysis and ingest business

DHSS's Data Quality Tools

- A **Real-time/Run-time** data quality/completeness database for:
  - SIDR SADR CAPER HL7 PDTS Appointment Ancillary CADRE SIT/OHI Other Data Types
- Database updated daily and scripted to provide **"event-driven" alerts** via e-mail for critical data quality issues or problems
- For DMIS ID's, "real time" and "snapshot" views of key data completeness measures
- Internal access for standard "canned" Data Quality/Completeness reports
- Multilayer data comparisons from raw to processed data for procedure-based actions
- ***Multilayer comparisons*** of related data types (e.g. SADR vs CAPER vs Appt vs WWR vs MEPRS)
- ***Statistical process control algorithms and control charts to detect data anomalies***

DHSS's "Data Tracker"

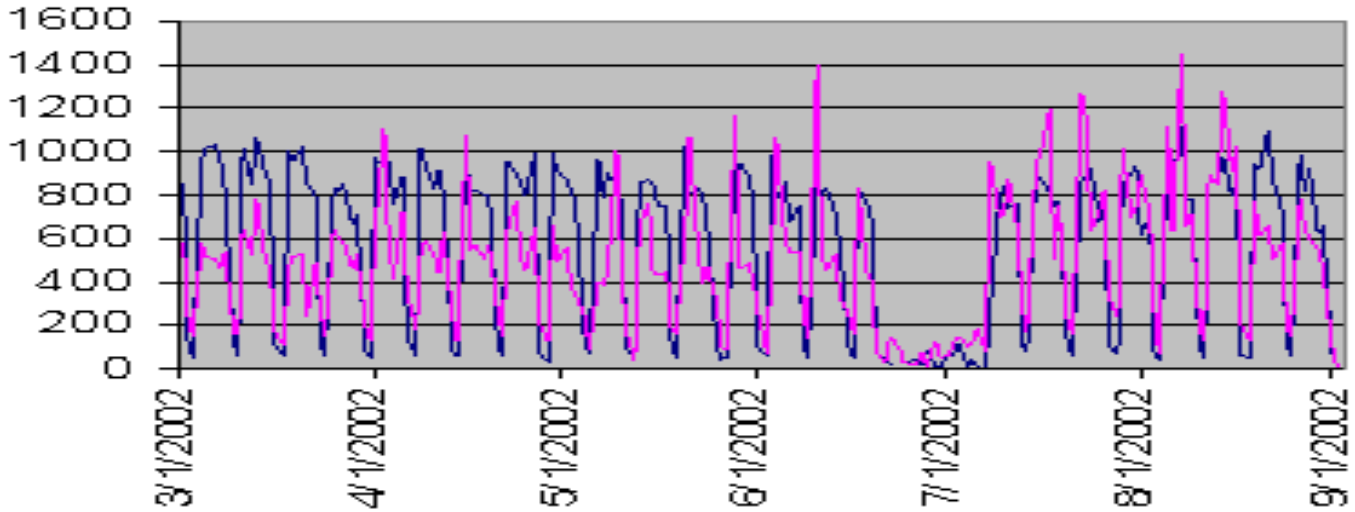
- **Essentially a "Mini MDR/M2". Data processed in real time**
- **Data Tracker tools and reports**
  - **SIDR, CAPER, HL7, Appointment, Ancillary, CADRE, SIT/OHI, TED Inst/Non-Inst reports provide:**
    - **File based accounting (e.g. Gap reports)**
    - **Treatment based accounting (e.g. reports based on care date)**
    - **Timeliness reporting (e.g. lag from care rendered date to ingest)**
    - **Other statistical reports including benchmarking against WWR**
    - **Statistical Process Control Alerting for SADR/CAPER anomalies**
  - **Other Data Tracker tools and reports**
    - **Monthly reports (SIDR and SADR/CAPER vs. WWR and Appointments – "Benchmarking")**
    - **Ad Hoc Queries to the Data Tracker**
    - **Gap Reports – Receipt Reports – Pull Reports**
  - **Current Data Tracker reports on the DHSS Web site**
    - **Daily SADR by HOST DMIS (The *"What Was Received Yesterday"* Report)**
    - **Daily SADR by Treatment ID – 90 Day (The daily *"90 Day Roller"* Report)**
    - **Monthly SIDR by Treatment DMIS**
    - **Weekly HL7 Gaps**

Basic Data Quality Assurance Tools

- **Start with Run Charts**

Example of facilities showing gaps in daily outpatient encounter data receipt. Investigation and data recovery actions required.

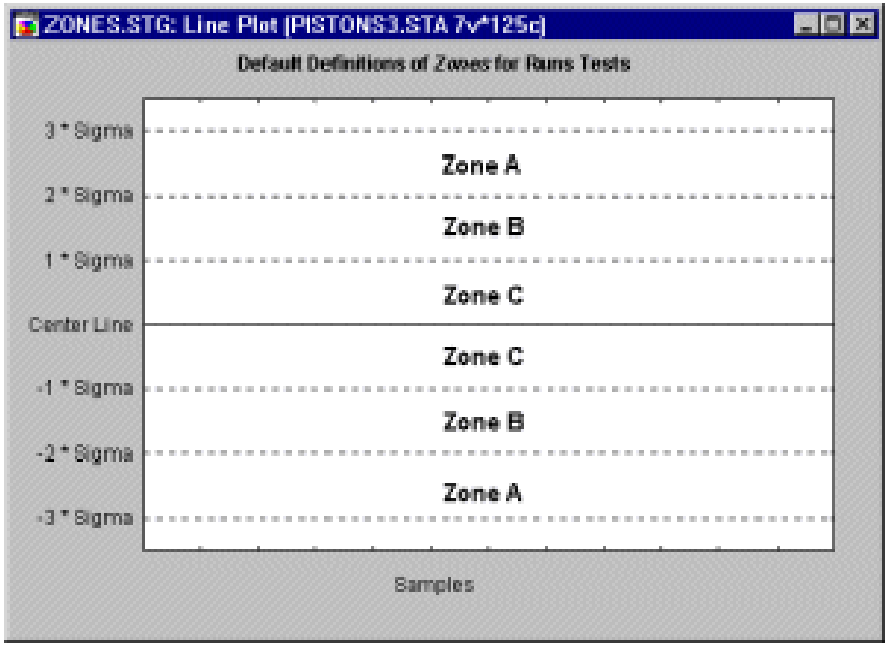
Data set has no correlation with other source system provided data

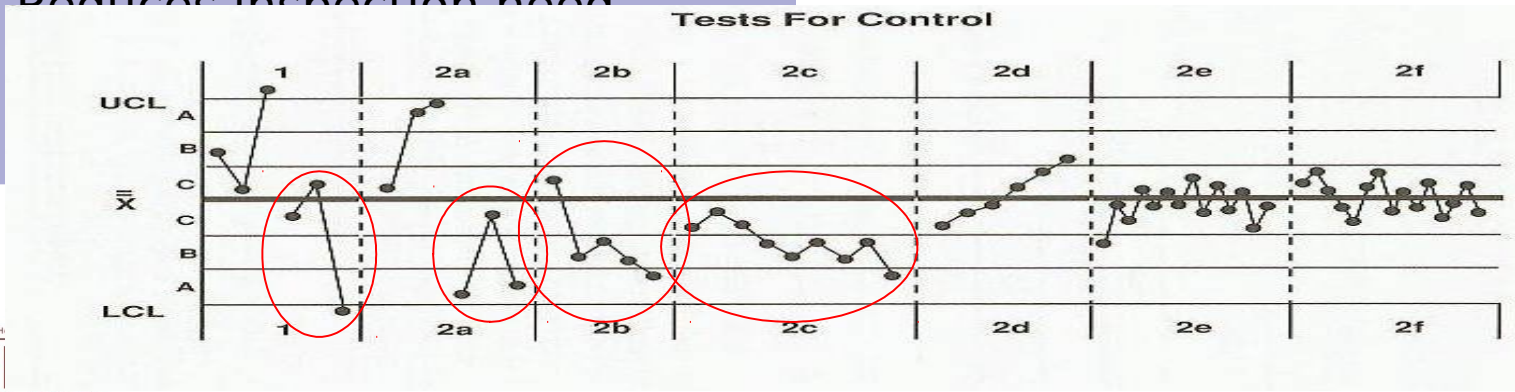


Data Completeness Determination

"Completeness" as a Process Control Problem

- Amenable to Statistical\Process Control
- Examine for Special Cause Variation
- Signals when a problem has occurred
- Detects variation
- Allows "Process Characterization"
- Reduces inspection need

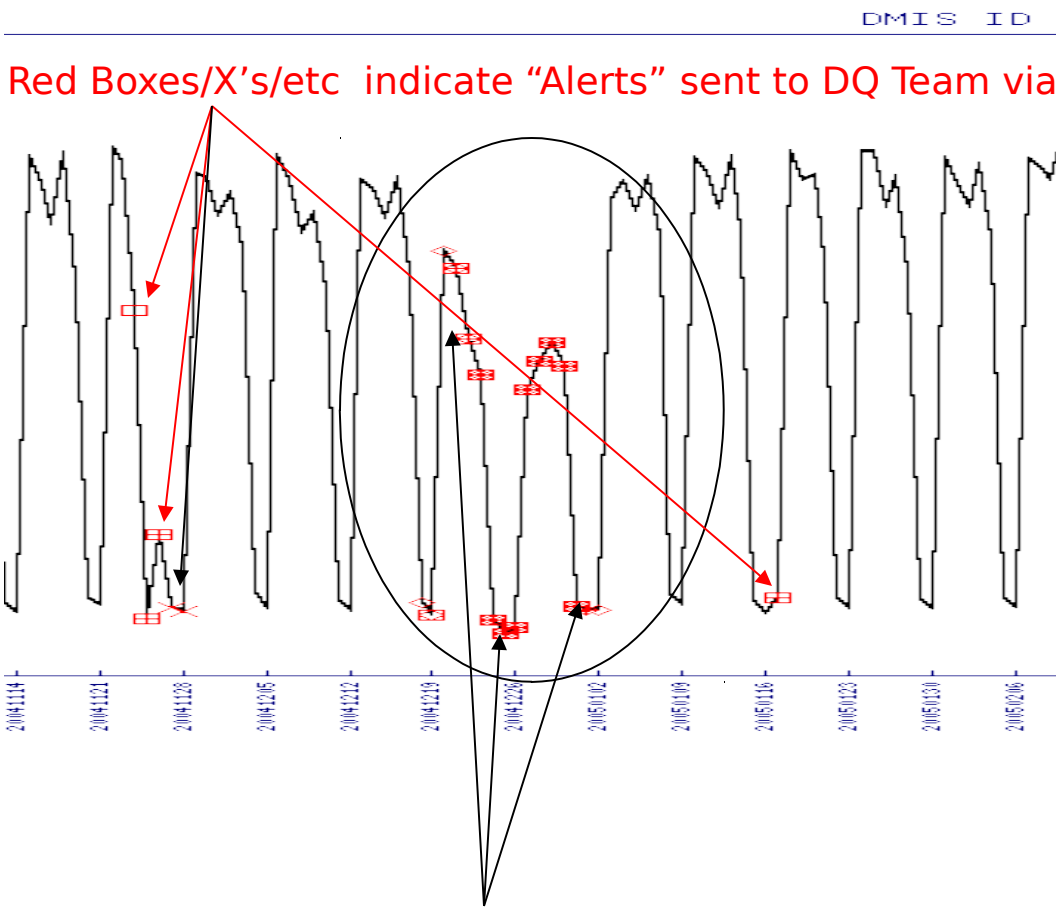




Compare Each Day To Itself

Project previous data to today then compare this projection with newly arrived data

- Red Boxes/X's/etc indicate "Alerts" sent to DQ Team via automated email



- **Holiday Logic Pending**

- *Chart: Encounters by Day*

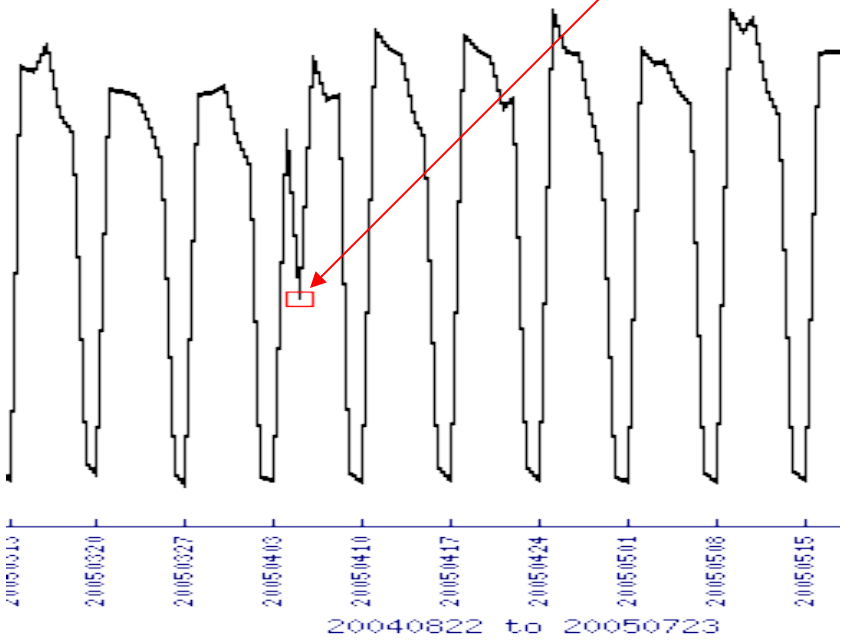
Identifying Data Completeness Problems

Alerting and Notification Issue

How do you identify and present "possible" problems when:

- the "problem" is transient,
- it is one data point in a series,
- it is from one of a vast number of daily input data sources?

- Red boxes/Xs/etc. indicate automatic e-mail "Alerts" to the data quality team.



- *Essentially a projection of previous data forward in time to today then a comparison of this projection with the newly arrived data.*

Report: CAPER vs Appointment vs WWR vs MEPRS

	A	B	C	F	G	L	M	N	Q	R	S	X	Y	Z	AE	AF	AG	AL	AM
1						SADR - includes appt inferred - APPTS		Consistency Variable **APPT** Inferred SADRs as % of All SADRs	SADR - MEPRSCD B		Ext Consistency B MEPR SADR as % of Same Month RAW SADR	SADR		Ext Consistency raw SADR as % of Same Month WWR	WWR		Ext Consistency APPTS (Inferred SADR) as % of Same Month WWR	MEPRS	
2	BRANCH	DMISID	FACILITY	MONTH		ADec10	AJan11		HDec10	HJan11		SDec10	SJan11		WDec10	WJan11		MDec10	MJan11
1027		**0058 Total**				205,128	216,203		182,973	192,901		198,745	209,425		107,999	114,667		103,862	112,00
1028	F	0059	22nd MEDICAL GROUP	Oct-09		6,887	6,887	14.38%	5,857	5,857	99.32%	5,897	5,897	126.57%	4,659	4,659	147.82%	4,652	4,65
1029	F	0059	22nd MEDICAL GROUP	Nov-09		5,679	5,679	10.00%	5,088	5,088	99.55%	5,111	5,111	120.60%	4,238	4,238	134.00%	4,238	4,23
1030	F	0059	22nd MEDICAL GROUP	Dec-09		5,381	5,381	1.17%	5,283	5,283	99.34%	5,318	5,318	117.29%	4,534	4,534	118.68%	4,472	4,47
1031	F	0059	22nd MEDICAL GROUP	Jan-10		6,060	6,060	1.60%	5,934	5,934	99.51%	5,963	5,963	120.12%	4,964	4,964	122.08%	4,918	4,91
1032	F	0059	22nd MEDICAL GROUP	Feb-10		5,726	5,726	1.35%	5,617	5,617	99.43%	5,649	5,649	119.25%	4,737	4,737	120.88%	4,679	4,67
1033	F	0059	22nd MEDICAL GROUP	Mar-10		7,789	7,789	1.70%	7,609	7,609	99.37%	7,657	7,657	119.38%	6,414	6,414	121.44%	6,414	6,41
1034	F	0059	22nd MEDICAL GROUP	Apr-10		7,430	7,430	1.35%	7,281	7,281	99.33%	7,330	7,330	119.79%	6,119	6,119	121.43%	6,119	6,11
1035	F	0059	22nd MEDICAL GROUP	May-10		6,273	6,273	1.31%	6,154	6,154	99.40%	6,191	6,191	124.54%	4,971	4,971	126.19%	4,946	4,94
1036	F	0059	22nd MEDICAL GROUP	Jun-10		6,800	6,799	1.47%	6,633	6,632	99.00%	6,700	6,699	125.00%	5,359	5,359	126.87%	5,359	5,35
1037	F	0059	22nd MEDICAL GROUP	Jul-10		6,083	6,083	1.13%	5,979	5,979	99.42%	6,014	6,014	119.68%	5,025	5,025	121.05%	4,942	4,94
1038	F	0059	22nd MEDICAL GROUP	Aug-10		6,613	6,612	1.41%	6,484	6,483	99.45%	6,520	6,519	120.88%	5,393	5,393	122.60%	5,260	5,26
1039	F	0059	22nd MEDICAL GROUP	Sep-10		6,340	6,340	2.16%	6,141									4,980	4,98
1040	F	0059	22nd MEDICAL GROUP	Oct-10		6,052	6,052	1.83%	5,900									4,855	4,85
1041	F	0059	22nd MEDICAL GROUP	Nov-10		6,114	6,156	1.82%	5,886										
1042	F	0059	22nd MEDICAL GROUP	Dec-10		727	5,720	1.40%	719										
1052		**0059 Total**				89,954	94,987		86,565									85,834	65,83
1053	A	0060	BLANCHFIELD ACH	Oct-09		72,945	72,945	2.92%	62,235									72,606	72,60
1054	A	0060	BLANCHFIELD ACH	Nov-09		71,171	71,169	2.72%	54,836									63,400	63,40
1055	A	0060	BLANCHFIELD ACH	Dec-09		64,285	64,286	2.72%	48,085									55,994	55,99
1056	A	0060	BLANCHFIELD ACH	Jan-10		65,178	65,177	2.90%	51,785	51,785	81.82%	63,288	63,290	129.17%	48,999	48,999	133.02%	60,689	60,68
1057	A	0060	BLANCHFIELD ACH	Feb-10		61,970	61,970	2.71%	49,003	49,003	81.27%	60,291	60,293	130.80%	46,095	46,095	134.44%	58,033	58,03
1058	A	0060	BLANCHFIELD ACH	Mar-10		76,743	76,743	2.93%	60,493	60,493	81.21%	74,492	74,492	130.55%	57,062	57,062	134.49%	71,913	71,91
1059	A	0060	BLANCHFIELD ACH	Apr-10		69,665	69,664	2.93%	55,270	55,269	81.73%	67,618	67,621	130.01%	52,012	52,012	133.94%	64,344	64,34
1060	A	0060	BLANCHFIELD ACH	May-10		57,871	57,871	2.91%	44,895	44,895	79.91%	56,185	56,185	131.75%	42,644	42,644	135.71%	50,668	50,66
1061	A	0060	BLANCHFIELD ACH	Jun-10		60,914	60,917	3.07%	46,359	46,362	78.51%	59,045	59,049	136.52%	43,252	43,252	140.84%	52,816	52,81
1062	A	0060	BLANCHFIELD ACH	Jul-10		58,712	58,716	2.96%	45,505	45,509	79.87%	56,972	56,978	132.71%	42,935	42,935	136.76%	52,783	52,78
1063	A	0060	BLANCHFIELD ACH	Aug-10		70,716	70,760	2.90%	54,037	54,080	78.71%	68,654	68,706	134.57%	51,057	51,057	138.59%	60,890	60,89
1064	A	0060	BLANCHFIELD ACH	Sep-10		68,341	68,374	2.68%	51,932	51,961	78.09%	66,498	66,539	136.08%	48,896	48,896	139.84%	58,873	58,87
1065	A	0060	BLANCHFIELD ACH	Oct-10		64,576	64,574	3.05%	49,744	49,744	79.46%	62,580	62,603	136.50%	45,864	45,864	140.79%	55,055	55,05
1066	A	0060	BLANCHFIELD ACH	Nov-10		63,442	63,641	2.71%	49,132	49,223	79.50%	61,618	61,916	136.47%	45,371	45,371	140.27%		54,57
1067	A	0060	BLANCHFIELD ACH	Dec-10		7,163	52,918	2.70%	5,165	40,193	78.06%	7,163	51,488	133.21%		38,652	136.91%		
1068	A	0060	BLANCHFIELD ACH	Jan-11			258	0.00%		47	18.22%		258						

- **Sharp increase in the difference between SADR and Appointments.**
- **[Audience Participation: Possible Causes?]**

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File Edit View Insert Format Tools Chart Window Help

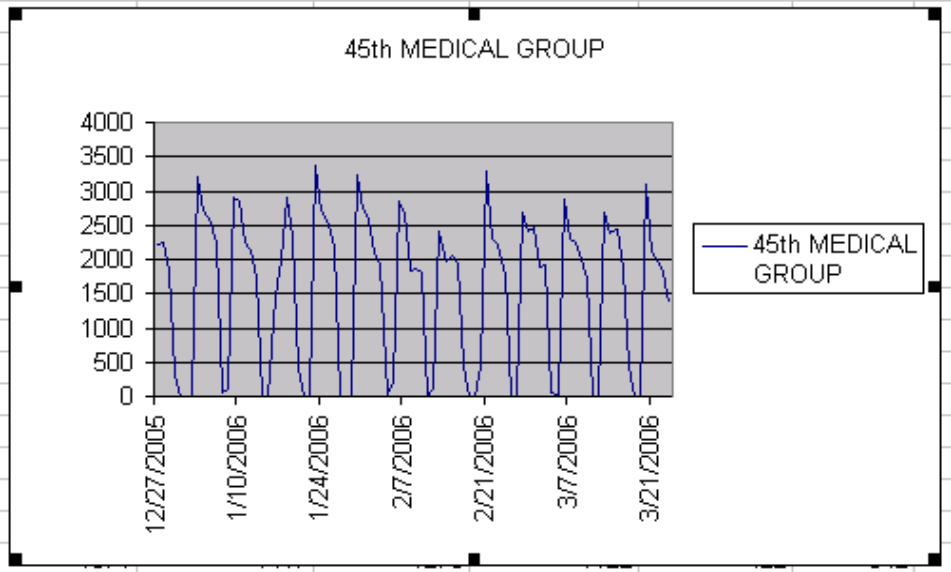
Type a question for help

Arial 10 B I U

Reply with Changes... End Review...

Chart 1

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Treatment	Medical Tr	12/27/2005	12/28/2005	12/29/2005	12/30/2005	12/31/2005	1/1/2006	1/2/2006	1/3/2006	1/4/2006	1/5/2006	1/6/2006
24	46	45th MED	2212	2239	1831	336		1		3208	2716	2615	2254
25	49	WINN ACH	2176	1767	1753	1191	310	280	453	2891	3258	2503	2898
26	66	89th MEDI	2158	1898	1636	287	519	352	543	3120	2431	2720	2167
27	24	NH CAMP							929	2657	2372	2975	2738
28	78	55th MEDI							769	2151	2276	2235	1884
29	55	375th MED							828	2858	2617	2566	2581
30	120	1st MEDIC							400	2335	2794	3012	1906
31	33	10TH MED							530	2040	1874	2106	1943
32	48	MARTIN A							774	2786	2985	2850	2743
33	10	355th MED							1	2427	1855	1765	1631
34	32	EVANS AC							563	2238	2501	2531	2244
35	123	DEWITT A							825	2351	2121	2004	2027
36	378	NBHC LITT							872	2027	1864	1840	1728
37	61	IRELAND A							1151	2332	2414	2114	1910
38	607	LANDSTUI							323	2499	2662	1519	2295
39	4	42ND MED							623	2125	1983	1697	1782
40	6	3rd MEDIC							765	2032	1929	1849	1733
41	121	MCDONAL							592	1518	1545	1532	1624
42	96	72nd MED							635	1876	1956	1832	1567
43	73	81st MEDI							809	1539	1463	1645	1357
44	126	NH BREM							441	1494	1430	1388	1609
45	75	L. WOOD	1346	1194	1335	598	271	426	582	1667	1705	1825	1781
46	98	REYNOLD	1332	1320	1337	226	98	110	270	1923	1934	2024	1749
47	330	GUTHRIE	1328	1226	1368	877	419	512	308	2024	2046	2331	2675
48	51	78th MEDI	1322	1079	1226	930		177	262	1788	1726	1597	1680
49	105	MONCRIE	1310	1588	1286	880	267	241	491	2113	2195	2105	2470
50	57	IRWIN ACI	1258	1088	1136	1005	496	268	284	1645	1461	1422	1503
51	621	NH OKINA	1166	1175	927	161	125	268	239	1055	1606	1201	1018
52	3	LYSTER A	1143	1040	1071	545	204	182	342	1662	1349	1512	1545
53	92	NH CHEF											1422
54	119	75th MED											1052
55	69	KIMBROU											1154



appt1

Chart Area

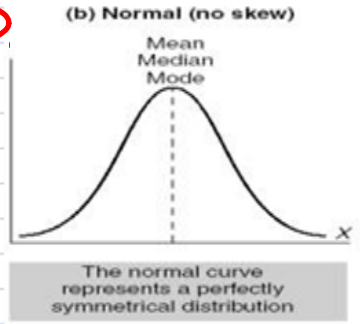
ready

- **Daily Ancillary Data Report - 90 Day Roller**

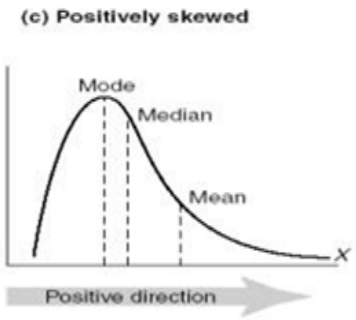
	Medical Treatment Facility	N (# of Encounters)	Mean	Standard Deviation
110	**DARNALL AMC**	**169464**	**2.94**	**3.82**
125	MADIGAN AMC	169193	4.75	6.74
109	BROOKE AMC	155957	4.35	5.38
89	WOMACK AMC	154777	3.47	4.25
117	59th MEDICAL WING	153855	4.76	5.45
29	NMC SAN DIEGO	145880	6.07	7.8
32	EVANS ACH	144485	3.19	4.06
124	NMC PORTSMOUTH	144467	5.15	7.88
37	WALTER REED ARMY MEDICAL CENTE	142962	3.82	5.93
52	TRIPLER AMC	141958	4.2	4.49
60	BLANCHFIELD ACH	139950	3.09	2.75
47	EISENHOWER AMC	118785	4.12	4.35
67	NNMC BETHESDA	117449	3.92	5.56
98	REYNOLDS ACH	102356	3.01	3.08
61	IRELAND ACH	98378	2.82	2.34
91	NH CAMP LEJEUNE	98277	3.89	6.91
108	WILLIAM BEAUMONT AMC	96737	4.22	5.05
48	MARTIN ACH	89883	2.86	2.27
49	WINN ACH	81377	2.88	2.49
14	60th MEDICAL GROUP	77770	4.44	6.03
75	L. WOOD ACH	73648	2.76	2.45
607	LANDSTUHL REGIONAL MEDCEN	73289	4.09	6.88
24	NH CAMP PENDLETON	73220	3.78	4.96
57	IRWIN ACH	71413	3.02	3.34
123	DEWITT ACH	71154	3.14	3.55
95	88th MEDICAL GROUP	69474	2.69	4.12
6	3rd MEDICAL GROUP	65102	3.7	4.06
330	GUTHRIE AHC	60978	2.83	2.4
42	96th MEDICAL GROUP	59496	3.93	4.17
79	MIKE OCALLAGHAN FEDERAL HOSPITA	58834	3.44	3.77
39	NH JACKSONVILLE	58208	4.18	4.51
64	BAYNE-JONES ACH	56231	2.57	2.89
437	SCHOFIELD BARRACKS AHC	55121	2.49	1.81
120	1st MEDICAL GROUP	54822	3.47	4

Site has the most encounters for the time frame. They do well on this metric compared to other large facilities. [Relatively low mean AND standard deviation, recall that 1.0 is the "lowest" obtainable mean, and 2.0 (2 days from encounter to receipt) a more realistic expectation]

What do THEY do, that the others do not? Why is their Standard Deviation more "Bell Curve" like than others?



Since greater Standard Deviation ='s more "Variation", some locations or other factors within the facility must do much better than others.



Data Quality Report – "ER Timeliness"

DMIS	Medical Treatment Facility	Service	N	Mean	Std
110	DARNALL AMC	A	6614	2.86	2.83
60	BLANCHFIELD ACH	A	6234	4.42	1.65
29	NMC SAN DIEGO	N	5516	**20.38**	4.51
89	WOMACK AMC	A	5261	2.66	1.56
125	MADIGAN AMC	A	5214	2.24	0.71
32	EVANS ACH	A	4685	3.11	1.24
117	59th MEDICAL WING	F	4647	**9.53**	7.05
124	NMC PORTSMOUTH	N	4539	**38.6**	2.02
108	WILLIAM BEAUMONT AMC	A	4279	3.9	2.93
109	BROOKE AMC	A	4147	3.51	2.47
52	TRIPLER AMC	A	4144	4.9	4.55
91	NH CAMP LEJEUNE	N	3701	**23.72**	15.04
24	NH CAMP PENDLETON	N	3397	2.41	0.72
79	MIKE OCALLAGHAN FEDERAL HOSPITAL	F	3226	4.09	0.9
47	EISENHOWER AMC	A	3073	3.81	1.14
39	NH JACKSONVILLE	N	2972	7.73	3.25
75	L. WOOD ACH	A	2940	2.47	0.64
49	WINN ACH	A	2816	3.36	3.1
57	IRWIN ACH	A	2745	2.51	1.2
48	MARTIN ACH	A	2712	2.74	1.38
6	3rd MEDICAL GROUP	F	2637	6.2	2.96
42	96th MEDICAL GROUP	F	2635	6.31	1.94
98	REYNOLDS ACH	A	2615	2.74	3.02
123	DEWITT ACH	A	2598	3.69	1.41
126	NH BREMERTON	N	2259	2.41	0.79
61	IRELAND ACH	A	2216	3.51	0.99
607	LANDSTUHL REGIONAL MEDCEN	A	2189	2.96	3.56
38	NH PENSACOLA	N	2187	2.85	2.8
621	NH OKINAWA	N	2030	5.17	2.65

- High Mean – Low Standard Deviation
- is worse than
- High Mean – High Standard Deviation

- Why?

- Low Std Dev means MOST records come in near the mean.

- High Std Dev means (in this example) relatively few records skew

• Data Quality Tools – "Difference Detectors"

DMISID	FACILITY	FY	FM	MONTH	Appr Inferred AApr08	Raw SADR SApr08	RAW SADRs - % Less than Inferred	Ext Consistency raw SADR as % of Same Month WWR	WWR WApr08
0037	WALTER REED ARMY MEDICAL	2007	02	Nov-06	72,681	70,099	96%	109.74%	63,880
0037	WALTER REED ARMY MEDICAL	2007	03	Dec-06	62,404	60,369	97%	110.57%	54,600
0037	WALTER REED ARMY MEDICAL	2007	04	Jan-07	73,535	71,146	97%	110.88%	64,163
0037	WALTER REED ARMY MEDICAL	2007	05	Feb-07	59,960	57,825	96%	109.53%	52,794
0037	WALTER REED ARMY MEDICAL	2007	06	Mar-07	72,419	69,961	97%	108.13%	64,700
0037	WALTER REED ARMY MEDICAL	2007	07	Apr-07	69,736	67,207	96%	111.18%	60,449
0037	WALTER REED ARMY MEDICAL	2007	08	May-07	73,889	71,046	96%	113.68%	62,496
0037	WALTER REED ARMY MEDICAL	2007	09	Jun-07	69,011	65,868	95%	114.19%	57,684
0037	WALTER REED ARMY MEDICAL	2007	10	Jul-07	64,747	62,396	96%	110.16%	56,640
0037	WALTER REED ARMY MEDICAL	2007	11	Aug-07	69,316	66,869	96%	117.63%	56,848
0037	WALTER REED ARMY MEDICAL	2007	12	Sep-07	62,279	58,674	94%	125.49%	46,756
0037	WALTER REED ARMY MEDICAL	2008	01	Oct-07	78,299	73,914	94%	123.55%	59,824
0037	WALTER REED ARMY MEDICAL	2008	02	Nov-07	69,506	66,624	96%	119.48%	55,761
0037	WALTER REED ARMY MEDICAL	2008	03	Dec-07	57,473	54,954	96%	118.20%	46,491
0037	WALTER REED ARMY MEDICAL	2008	04	Jan-08	75,470	62,533	83%	99.77%	62,679
0037	WALTER REED ARMY MEDICAL	2008	05	Feb-08	68,328	65,453	96%	117.01%	55,939
0037	WALTER REED ARMY MEDICAL	2008	06	Mar-08	62,227	62,227	100%	105.35%	59,066

• Data Quality Tools – "Interface Monitoring"

Map of CHCS Sending Facilities to EIDS Operations Site ID and DMIS ID					Msg Receipts at EIDS - March 2008 - By Sending Application						
CHCS Sending Facilty	EIDS Ops Site ID	DMIS ID	Medical Treatment Facility	Service	IV	LAB AP	LAB CH	LAB MI	MED	RAD	RX
A1411	0110	0110	DARNALL ACH-FT. HOOD	A	Y	Y	Y	Y	Y	Y	Y
HP0125	0125	0125	MADIGAN AMC-FT. LEWIS	A	Y	Y	Y	Y	Y	Y	Y
A1631	0131	0131	WEED ACH-FT. IRWIN	A	Y	Y	Y	Y	Y	Y	Y
HP0330	0330	0330	GUTHRIE AHC-FT. DRUM	A	N	Y	Y	Y	N	Y	Y
HP0607	0607	0607	LANDSTUHL REGIONAL MEDCEN	A	Y	Y	Y	Y	Y	Y	Y
A0611	0612	0612	121st GEN HOSP-SEOUL	A	Y	Y	Y	Y	Y	Y	Y
N68094	0024	0024	NH CAMP PENDLETON	N	Y	Y	Y	Y	Y	Y	Y
N66095	0028	0028	NH LEMOORE	N	Y	Y	Y	Y	Y	Y	Y
N00259	0029	0029	NMC SAN DIEGO	N	Y	Y	Y	Y	Y	Y	Y
HP0035	0035	0035	NACC GROTON	N	Y	Y	Y	Y	N	Y	Y
N00203	0038	0038	NH PENSACOLA	N	Missing 14-23 Mar	Missing 14-23 Mar	Missing 14-23 Mar	Missing 14-23 Mar	Missing 14-23 Mar	Missing 14-23 Mar	Missing 14-23 Mar
N00232	0039	0039	NH JACKSONVILLE	N	Y	Y	Y	Y	Y	Y	Y
N00211	0056	0056	NH GREAT LAKES	N	N	Y	Y	Y	N	Y	Y
HP0091	0091	0091	NH CAMP LEJEUNE	N	Y	Y	Y	Y	Y	Y	Y
N68084	0103	0103	NH CHARLESTON	N	Y	Y	Y	Y	Y	Y	Y
N00118	0118	0118	NH CORPUS CHRISTI	N	N	Y	Y	Y	N	Y	Y
N00183	0124	0124	NMC PORTSMOUTH	N	Y	Y	Y	Y	Y	Y	Y
HP0615	0615	0615	NH GUANTANAMO BAY	N	Y	Y	Y	Y	Y	Y	Y
HP0616	0616	0616	NH ROOSEVELT ROADS-CEIBA	N	N	N	N	N	N	N	Y
N66096	0617	0617	NH NAPLES	N	Y	Y	Y	Y	Y	Y	Y
HP0618	0618	0618	NH ROTA	N	Y	Y	Y	Y	Y	Y	Y
N68096	0620	0620	NH GUAM-AGANA	N	Y	Y	Y	Y	Y	Y	Y
N68470	0621	0621	NH OKINAWA	N	Y	Y	Y	Y	Y	Y	Y
HP0622	0622	0622	NH YOKOSUKA	N	Y	Y	Y	Y	Y	Y	Y
N68875	0623	0623	NH KEFLAVIK	N	N	N	N	N	N	N	N
N39163	0624	0624	NH SIGONELLA	N	Y	Y	Y	Y	Y	Y	Y
HP1170	1170	1170	BMC NSA BAHRAIN	N	N	Y	Y	Y	N	Y	Y
F0155	0004	0004	42ND MEDICAL GROUP-MAXWELL	F	N	Y	Y	Y	N	Y	Y
F0252	0006	0006	3rd MED GRP-ELMENDORF	F	Y	Y	Y	Y	Y	Y	Y
F0452	0009	0009	56th MED GRP-LUKE	F	N	Y	Y	Y	N	Y	Y
F0451	0010	0010	355th MED GRP-DAVIS MONTHAN	F	N	Y	Y	Y	N	Y	Y
F0553	0013	0013	314th MED GRP-LITTLE ROCK	F	N	Y	Y	Y	N	Y	Y
HP0014	0014	0014	60th MED GRP-TRAVIS	F	Y	Y	Y	Y	Y	Y	Y
F0670	0018	0018	30th MED GRP-VANDENBERG	F	N	Y	Y	Y	N	Y	Y
F0654	0019	0019	95th MED GRP-EDWARDS	F	N	Y	Y	Y	N	Y	Y
F1051	0036	0036	436th MED GRP-DOVER	F	N	Y	Y	Y	N	Y	Y
HP0042	0042	0042	96th MED GRP-EGLIN	F	Missing 1-28 Mar	Missing 1-28 Mar	Missing 1-28 Mar	Missing 1-28 Mar	Missing 1-28 Mar	Missing 1-28 Mar	Missing 1-28 Mar
HP0043	0043	0043	325th MED GRP-TYNDALL	F	N	Y	Y	Y	N	Y	Y
HP0045	0045	0045	6th MED GRP-MACDILL	F	Y	Y	Y	Y	N	Y	Y
F1256	0046	0046	45th MED GRP-PATRICK	F	N	Y	Y	Y	N	Y	Y
F1355	0050	0050	347th MED GRP-MOODY	F	N	Missing 1-6 Mar	Missing 1-6 Mar	Missing 1-6 Mar	N	Missing 1-6 Mar	Missing 1-6 Mar
F1356	0051	0051	78th MED GRP-ROBINS	F	N	Y	Y	Y	N	Y	Y
F1651	0053	0053	366th MED GRP-MOUNTAIN HOME	F	Y	Y	Y	Y	Y	Y	Y
HP0055	0055	0055	375th MED GRP-SCOTT	F	N	Y	Y	Y	N	Y	Y
F2057	0059	0059	22nd MED GRP-MCCONNELL	F	N	Y	Y	Y	N	Y	Y
HP0062	0062	0062	2nd MED GRP-BARKSDALE	F	N	Y	Y	Y	N	Y	Y
F2853	0073	0073	81st MED GRP-KEESLER	F	Y	Y	Y	Y	Y	Y	Y
F2851	0074	0074	14th MED GRP-COLUMBUS	F	N	Y	Y	Y	N	Y	Y
F2954	0076	0076	509th MED GRP-WHITEMAN	F	N	Y	Y	Y	N	Y	Y
F3051	0077	0077	341st MED GRP-MALMSTROM	F	N	N	Rcvd 4 Mar only	Rcvd 4 Mar only	N	Rcvd 4 Mar only	Rcvd 4 Mar only
HP0078	0078	0078	55th MED GRP-OFFUTT	F	Y	Y	Y	Y	N	Y	Y
F3251	0079	0079	99th MED GRP-O'CALLAGHAN HOSP	F	Y	Y	Y	Y	Y	Y	Y
F3552	0083	0083	377th MED GRP-KIRTLAND	F	N	N	N	N	N	N	Y
HP0084	0084	0084	49th MED GRP-HOLLOMAN	F	N	Y	Y	Y	N	Y	Y
F3554	0085	0085	27th MED GRP-CANNON	F	N	Y	Y	Y	N	Y	Y
FJA56	0639	0639	35th MED GRP-MISAWA	F	Y	Y	Y	Y	Y	Y	Y
FIT52	0808	0808	31st MED GRP-AVIANO	F	Y	Y	Y	Y	Y	Y	Y
HP0130	aka	0130	USCG CLINIC KODIAK, AK	C	N	N	Y	Y	N	N	Y
HP0416	cen	0416	MOBILE USCG CLINIC	C	N	N	Y	Y	N	Y	Y
HP0428	eas	0428	CAPE MAY COAST GUARD CLINIC	C	N	N	Y	Y	N	N	Y
HP7043	hia	7043	HONOLULU COAST GUARD CLINIC	C	Test Site	Test Site	Test Site	Test Site	Test Site	Test Site	Test Site
HP0067	ncac	0067	NNMC BETHESDA, MD	N	Y	Y	Y	Y	Y	Y	Y
HP0418	pac	0418	ALAMEDA COAST GUARD CLINIC	C	N	N	Y	Y	N	N	Y
HP7042	pra	7042	BORINQEN COAST GUARD CLINIC	C	N	N	Y	Y	N	N	Y

Monthly Msg Receipts By App

Defense Health Services Systems
DHSS
Program Executive Office

Data Quality Processes

Problem Determination Proc

"File Level" Gaps

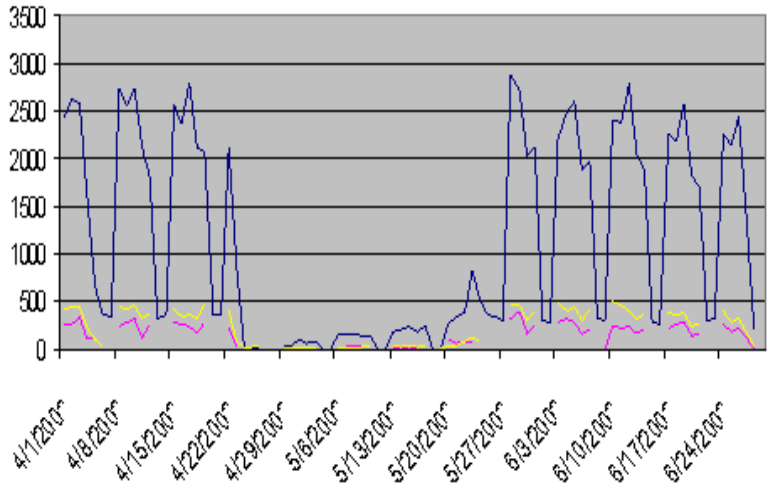
- Automated Process
  - e.g. Nothing received as of date or duration
- CAPER Example
  - Nothing received in >2 days – Email Alert includes Service POCs

```
From: admtrak.edwn11_sw@iris.den.disa.mil [mailto:admtrak.edwn11_sw@iris.den.disa.mil]
Sent: Monday, July 30, 2007 11:08 AM
Subject: SADR GAPs

SADR Gaps on 07/29/2007 as of 07/30/2007

Site ID,        Medical Treatment Facility,   Days Missing,    Host,
KAFB0038,       NH PENSACOLA,                 4,              edwn35_sw,
KAFB0073,       81st MEDICAL GROUP,           4,              edwn35_sw,
KAFB0316,       NBHC GULFPORT,                4,              edwn35_sw,
KAFB0436,       KGADS,NBHC NAS BELLE CHASE,   4,              edwn35_sw,
KAFB0654,       KGADS,NBHC PASCAGOULA,        4,              edwn35_sw,
KAFB1990,       KGADS,BMC NAVSUPPACT EBANK,   4,              edwn35_sw,
```

Note Files contain data from many encounter dates. ***Files may be received daily, but these files may not correlate with CURRENT data]***

"Encounter Date" Analysis

- Monthly and ad hoc manual review
  e.g. Run Charts
- SPC Control Charts are designed to provide an automated means to perform this activity)



“Non Receipt” Triggers Monthly Analysis

	1/28/2010	1/28/2010	1/29/2010	1/29/2010	1/30/2010	2/4/2010	2/4/2010	2/5/2010	2/5/2010	2/6/2010	2/14/2010	2/15/2010	2/15/2010	2/16/2010	2/16/2010	2/17/2010	2/17/2010	2/18/2010	2/18/2010	2
Medical Treatment Facility	Files	Records	Files	Records	Files	Files	Records	Files	Records	Files	Records	Files	Records	Files	Records	Files	Records	Files	Records	Fi
LYSTER AHC	1	1049	1	862	1	1	1000	1	803	1										
14th MEDICAL GROUP	1	168	1	177	1	1	140	1	230	1	24	1	19							
BASSETT ACH	1	1190	1	1109	1	1	936	1	1298	1	245	1	340							
FT. GREELY AHC	1	1	1	1	1	1	8	1	22	1	1	1	1							
354th MEDICAL GROUP	1	156	1	177	1	1	153	1	152	1	1	1	1							
FAIRBANKS MEMORIAL (	1	1	1	1	1	1	1	1	1	1	1	1	1							
COMBINED MEDICAL SVCS CLN-FT.	1	114	1	120	1	1	109	1	176	1	7	1	10							
KAMISH CLINIC-FT. WAINWRIGHT	1	147	1	127	1	1	163	1	192	1	1	1	1							
97th MEDICAL GROUP	1	69	1	5	1			2	2	1	1	1	25	1	197	1	170	1	279	
EVANS ACH	1	6711	1	4775	1	1	5106			2	277	1	333	1	4974	1	5720	1	7148	
10TH MEDICAL GROUP	1	1644	1	1244	1	1	1326			2	76	1	83	1	1251	1	1516	1	1646	
21st MEDICAL GROUP	1	403	1	538	1	1	943			2	37	1	27	1	717	1	778	1	900	
CIV EMP HLTH CLINIC-PUEBLO	1	9	1	21	1	1	18			2	1	1	1	1	13	1	14	1	15	
PREMIER ARMY HEALTH CLINIC	1	292	1	185	1	1	213			2	1	1	19	1	229	1	199	1	262	
460th MED GRP-BUCKLEY AFB	1	498	1	173	1	1	327			2	1	1	1	1	473	1	543	1	356	
TMC 10-FT. CARSON	1	478	1	378	1	1	172			2	2	1	14	1	217	1	188	1	278	
TMC 9-FT. CARSON	1	462	1	324	1	1	256			2	3	1	12	1	310	1	314	1	329	
WARRIOR CLINIC-FT. CARSON	1	472	1	316	1	1	254			2	2	1	3	1	266	1	281	1	363	

List of Problem Facilities - AUTOMATED IDENTIFICATION USING STATISTICAL PROCESS CONTROL ALGORYTHMS

Human Interpretation: 2 files after one day gap and volume appears consistent with prior "same days"

STATISTICAL PROCESS CONTROL - Determines that volume for X days is NOT consistent with prior data

SPC AND File Absence Alerting

Data Quality Processes

Problem Resolution Process : IF "**file level**" OR "**encounter date level**" problem detected:

- Immediate MHS Help Desk Ticket
- Notification if problem is deemed "significant and or long standing"
- Determination if "Blaster" message to analytical community is appropriate or required. Note that individual site "transient" halts in transmission occur regularly and are usually resolved quickly. These "transient" problems are not reported in real time as M2 utilizes a batch process and problems are often resolved between batch processing cycles.
- Coordination with "Service POCs" to determine is problem also exists in "Service" databases.
- Recovery of files via sharing between service databases and DHSS
- Tier III recovery/reharvest of missing data (except HL7 and Ancillary as no reharvest mechanism exists)

Data Quality Processes

Common Problems – In Order of Occurrence

Four Broad Categories:

- Provider/Coding Issues
  - "Slow Coding" from the data receipt perspective (as compared to other like facilities)
  - Provider "left"
- Transmission/Send of Data
  - Sy-ETU Problems
  - Host Issues (e.g. Change Package induced problems)
- Network Routing Issues
- Ingest or Processing (e.g. DHSS downtime – very rare)

DHSS's Tools Improve MHS Data Quality

And allow DHSS to:

Catalog data files

Monitor data completeness

Provide metrics to assess data quality/completeness of data received

Design, develop and maintain data quality software

The Key To Data Quality Success

- Partnering with our users to maximize information sharing
- Questions?

Contact MHS Service Desk
Email: mhssc@tma.osd.mil
Telephone: (800) 600-9332
Web site:
https://www.mcis.osd.mil/cm/mhs_service_desk.cfm

Contact DHSS Email: dhss2@tma.osd.mil	